ON THE METEORS OF JANUARY 2ND.

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The second of January was first designated as a meteoric epoch in 1839, by the late Edward C. Herrick, Esq., of New Haven, Connecticut. Modern observations of this shower have not been sufficient to determine the rate of its nodal motion: it may be worthy of remark, however, that a progressive movement equal to that of the meteors of November 14th, would bring the display of December 2d, A. D. 848, forward to the epoch of January 2d. The dates of the star showers derived from this swarm, the first being doubtful, are as follows:

1. A. D. 848, December 2d, assumed to correspond to the modern epoch of January 2d.*

2. 1825. On the morning of January 2d, a shower of falling stars was seen in Tuscany, Italy. During the display, about five o'clock, a brilliant fireball appeared, which was doubtless derived from the same meteor group.†

3. 1835. On the 2d of January, according to M. Wartmann, an extraordinary apparition of shooting stars was observed at Mornez, near Geneva.‡

4. 1838. January 2d, a similar display was reported by the same observer.§

5. 1839. M. Bravais states that the night of January 2d, 1839, was very remarkable at Bossekop, in Finland, for its great number of shooting stars and a magnificent aurora.‖

6 1840. On the night of January 2d–3d a great number of meteors were observed toward morning by M. Duprez, at Gand. At the same time a bright aurora was seen at Geneva, and magnetic perturbations were noticed at Prague.¶

7. 1862. A shower of meteors was seen at New Haven, Connecticut, on the morning of January 2d. About four o'clock, as many as three per minute were seen by one observer.**

8. 1863. On the morning of January 2d, Mr. Stillman Masterman, at Weld, Franklin County, Maine, saw meteors falling at the rate of 48 per hour. On the morning of the 1st, also, they were unusually numerous.††

9. 1864. January 2d, R. P. Greg, Esq., of Manchester, England, and Professor A. S. Herschel, "mapped each about 60 meteors in two hours."‡‡

10. 1865. "On the morning of January 2d, 1865, shooting stars were sufficiently numerous to attract the attention, at New Haven, of those who were not aware that unusual numbers were looked for on that morning."§§

* Quetelet's Catalogue.
† Silliman's Journal, March, 1862, p. 290.
‡ Quetelet's Catalogue. § Ibid ‖ Ib. ¶ Ib.
** Silliman's Journ., March, 1862, p. 290.
†† Silliman's Journ., January, 1863, p. 150.
‡‡ Ib., May, 1864, p. 445 §§ Ib., March, 1865, p. 231.

More observations will evidently be necessary to determine the period. The preceding dates, however, may all be represented in the following scheme:

A. D. 849 to 1825.....75 periods of 13 years.
1825 to 1838..... 1 period of 13 "
1838 to 1864..... 2 periods of 13 "

It seems, therefore, somewhat probable that the meteors of this group complete a revolution in about 13 years. The showers of 1835–40 indicate, moreover, that the cluster has become so much extended as to occupy five years in passing the node. With a period of 13 years we find the

Mean distance..... = 5.53
Aphelion " ..... = 10.06

or nearly equal to the distance of Saturn.

In the *Astronomische Nachrichten*, No. 1632, Dr. Edmund Weiss, of Vienna, called attention to the fact, that the fourth comet of 1860, in its ascending node, approaches very near the point passed by the earth about the 3d of January. The elements of this comet according to Valz are as follows:

Perihelion Passage.....1860, Sept. 28.
Longitude of perihelion.....110° 59′
Longitude of ascending node.....104° 14′
Inclination..... 28° 14′
Perihelion distance..... 0.9537
Eccentricity..... 1.0000
Motion..... Retrograde.

The comet was discovered by Tempel, at Marseilles, on the 23d of October. It was very faint, and but four observations were obtained. It had an apparent diameter of from three to four minutes. Its light was "not uniform, but scattered like a small cluster of very delicate stars, insomuch, that the discoverer was for some time doubtful whether it was really a comet." The body in this respect had a striking resemblance to that of 1866, which is associated with the meteors of November 14th.

According to M. Valz the orbit of the comet of 1860 (IV) is a parabola. The observations, however, which were very imperfect, could be perhaps as well represented by elliptic elements. If it is really the source of the January meteors, its periodicity must be regarded as at least highly probable. It is remarkable, moreover, that on the hypothesis of elliptic motion, the longitude of the comet's descending node differs less than 8° from that of its aphelion. The latter point is, therefore, very probably near the orbit of one of the major planets.

If the period be thirteen years, the comet should have returned in the latter part of 1873, and the maximum fall of the associated meteors should occur about 1877.